PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP1012-0

STEREO RECEIVER

SX-1000(BK)

MODEL SX-1000(BK)COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Destination
KU	AC120V only	U.S.A.
KC	AC120V only	Canada

- This service manual is applicable to the KU type.
- As to the KC type please refer to the additional service manual (ARP-1013).

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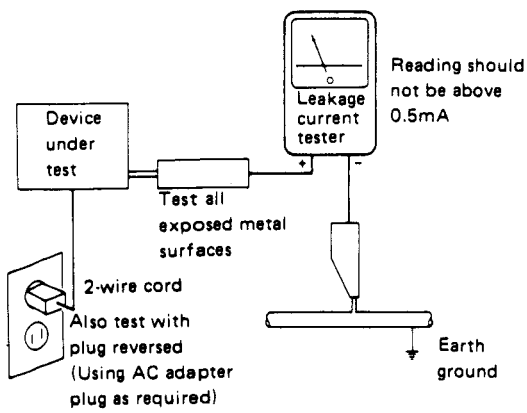
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. SPECIFICATIONS

Amplifier Section

Continuous Average Power Output is 25 watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz with no more than 0.3% total harmonic distortion.

Continuous Power Output (both channel driven)
- 1 kHz, T.H.D. 0.3%, 8 Ω ..... 28 W + 28 W
- 40 Hz–20 kHz, T.H.D. 0.3%, 8Ω ..... 25 W + 25 W

Total Harmonic Distortion
- 1 kHz, 12.5 W, 8 Ω 0.05%

Input (Sensitivity/Impedance)
- PHONO ..... 2.5 mV/47 kΩ
- CD, TAPE PLAY, AUX, VCR ..... 150 mV/22 kΩ

Phono Overload Level (T.H.D. 0.01%, 1,000 Hz)
- PHONO ..... 130 mV

Frequency Response
- PHONO (RIAA Equalization) ..... 30 Hz to 20,000 Hz ±0.5 dB
- CD, AUX, ... 10 Hz to 70,000 Hz $\pm^{0.5}_{3.0}$ dB

Hum and Noise (IHF, short circuited, A network)
- PHONO ..... 72 dB
- CD, TAPE PLAY, AUX, ... 94 dB

Graphic Equalizer frequency band ..... 100 Hz, 330 Hz, 1 kHz, 3.3 kHz, 10 kHz, ±8 dB

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... 11.2 dBf (1.0 μV/75 Ω)
50 dB Quieting Sensitivity
- MONO ..... 15.3 dBf (1.6 μV/75 Ω)
- STEREO ..... 38.3 dBf (22.5 μV/75 Ω)

Signal-to-Noise Ratio
- MONO ..... 78 dB (at 85 dBf)
- STEREO ..... 75 dB (at 85 dBf)

Distortion
- STEREO ..... 0.5% (1 kHz)

Alternate Channel Selectivity ..... 55 dB (400 kHz)
Stereo Separation ..... 35 dB (1 kHz)
Frequency Response ..... 30 Hz to 15 kHz, ($\pm\frac{1}{2}$) dB
Antenna Input ..... 300 Ω balanced, 75 Ω unbalanced

AM Tuner Section

Frequency range
- When 10 kHz step ..... 530 kHz to 1,600 kHz
- When 9 kHz step ..... 531 kHz to 1,602 kHz

Sensitivity
- IHF, Loop antenna ..... 300 μV/m

Selectivity ..... 20 dB
Signal-to-Noise Ratio ..... 50 dB
Antenna ..... AM Loop Antenna

Miscellaneous

Power Requirements .....
- U.S., Canadian model ..... AC 120 Volts, 60 Hz

Power Consumption ..... 110 Watts
Dimensions ..... 420 (W) x 98 (H) x 220 (D) mm
16-9/16 (W) x 3-7/8 (H) x 8-11/16 (D) in
Weight (without package) ..... 3.6 kg (7 lb 15 oz)

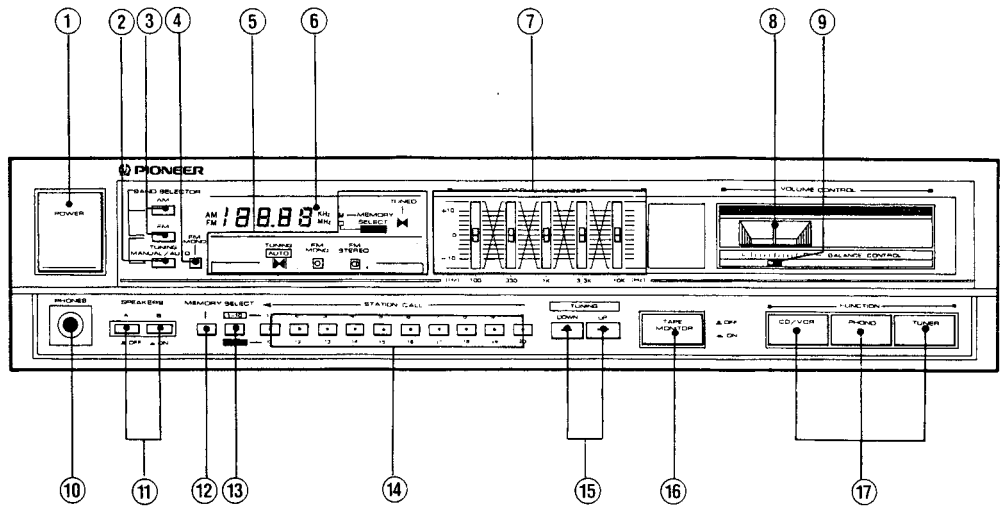
Furnished Parts

FM T-type Antenna 1
AM Loop Antenna 1
Operating Instructions 1

** Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier.*

NOTE:
Specifications and design subject to possible modification without notice due to improvements.

3. FRONT PANEL FACILITIES



The illustration shows model SX-1000.

① POWER button

When this button is pressed, power is supplied to the unit. To turn power off, press the button again to the released position.

② TUNING MANUAL/AUTO button

Works during FM reception. Use to select either the AUTO mode or MANUAL mode for FM reception.
Indicators on the display panel show whether the mode selected is MANUAL or AUTO.

③ BAND SELECTOR buttons

[Model SX-1000]
These buttons are used to select either AM or FM reception.
AM: Push this button for AM reception.
FM: Push this button for FM reception.

④ FM MONO button

Normally, the MONO indicator remains off. However, it may not be possible to tune in a desired FM station because it is too far away or because its signals are too weak. In cases like these, press the button to set the reception to the monaural mode (MONO indicator lights) and tune in the station. The program of an FM stereo broadcast will be heard in mono. The setting of the FM MONO button (ON or OFF) is memorized along with the station's frequency in the STATION CALL buttons.
When using the preset tuning feature, reception will be in the mode selected when the station was memorized.
This button will not function for AM (MW or LW) reception.

⑤ Indicators

[MEMORY] (M)
This lights when the MEMORY button is pressed. Stations can be preset into the STATION CALL buttons while this indicator is on.
[SELECT (11 – 20)] (■)
This lights when the SELECT button is pressed and mode 2 (11 – 20) is established.

[TUNED] (⋈)
This lights to indicate that a station has been optimally tuned in.
[TUNING AUTO] (|⋈|)
Lights when the auto tuning mode is selected during FM reception.
[FM MONO] (⊙)
Lights when the FM MONO button is pressed to select monaural FM reception.
[FM STEREO] (◎)
This lights during FM stereo reception.

⑥ Frequency display

This display normally shows the frequency of the station selected. When a STATION CALL button is pressed, the channel number for that station (the number of the STATION CALL button) is displayed for a few seconds. The display will show [--CH] during other than preset tuning.

⑦ GRAPHIC EQUALIZER controls

The equalizer is divided into five frequency ranges (100 Hz, 330 Hz, 1 kHz, 3.3 kHz, 10 kHz) to tailor music to the individual taste of the listener.

⑧ VOLUME control

⑨ BALANCE control

⑩ PHONES jack

This is a standard "plug-type jack" for headphones.

⑪ SPEAKERS buttons (■ OFF, ▬ ON)

These are used to select the speaker through which you wish to listen.
A: When the speakers connected to A terminals are in use.
B: When the speakers connected to B terminals are in use.
• Turn both A and B speakers to OFF position when only the HEADPHONES are in use.

NOTE:
No sound will be heard through the speakers when both A and B buttons are depressed if only one set of speakers has been connected to either A or B SPEAKERS terminals.

⑫ MEMORY button

This is used to memorize stations. When the button is pressed, the MEMORY indicator will light. To memorize the frequency of any station, press the STATION CALL button while the MEMORY indicator is lit.

⑬ SELECT button

This button is used to set the STATION CALL buttons to Mode 1 (1—10) or MODE 2 (11—20). Mode 2 (11—20) is obtained when the button is pressed and select indicator is lit.

NOTE:
Changing the position of this button has no effect on receiver performance itself.

⑭ STATION CALL buttons

These are used to recall preset broadcasting stations and to preset the station.

⑮ TUNING buttons (−, +)

The function of these buttons differs according to whether AUTO tuning or MANUAL tuning is selected during FM reception. The MANUAL tuning mode is automatically selected for AM reception.
[AUTO tuning mode]
When the "+" button is pressed, the frequencies are scanned in ascending order; when the "−" button is pressed, they are scanned in descending order. Scanning stops as soon as a station has automatically been tuned in.
[MANUAL tuning mode]
When the "+" button is pressed, the frequency increases and when the "−" button is pressed, it decreases. Every time either button is pressed, the frequency changes one step at a time and when the button is kept pressed, the frequency changes continuously.

⑯ TAPE MONITOR button (■ OFF, ▬ ON)

[TAPE MONITOR]
Press when playing the tape deck connected to the TAPE jacks.

⑰ FUNCTION buttons

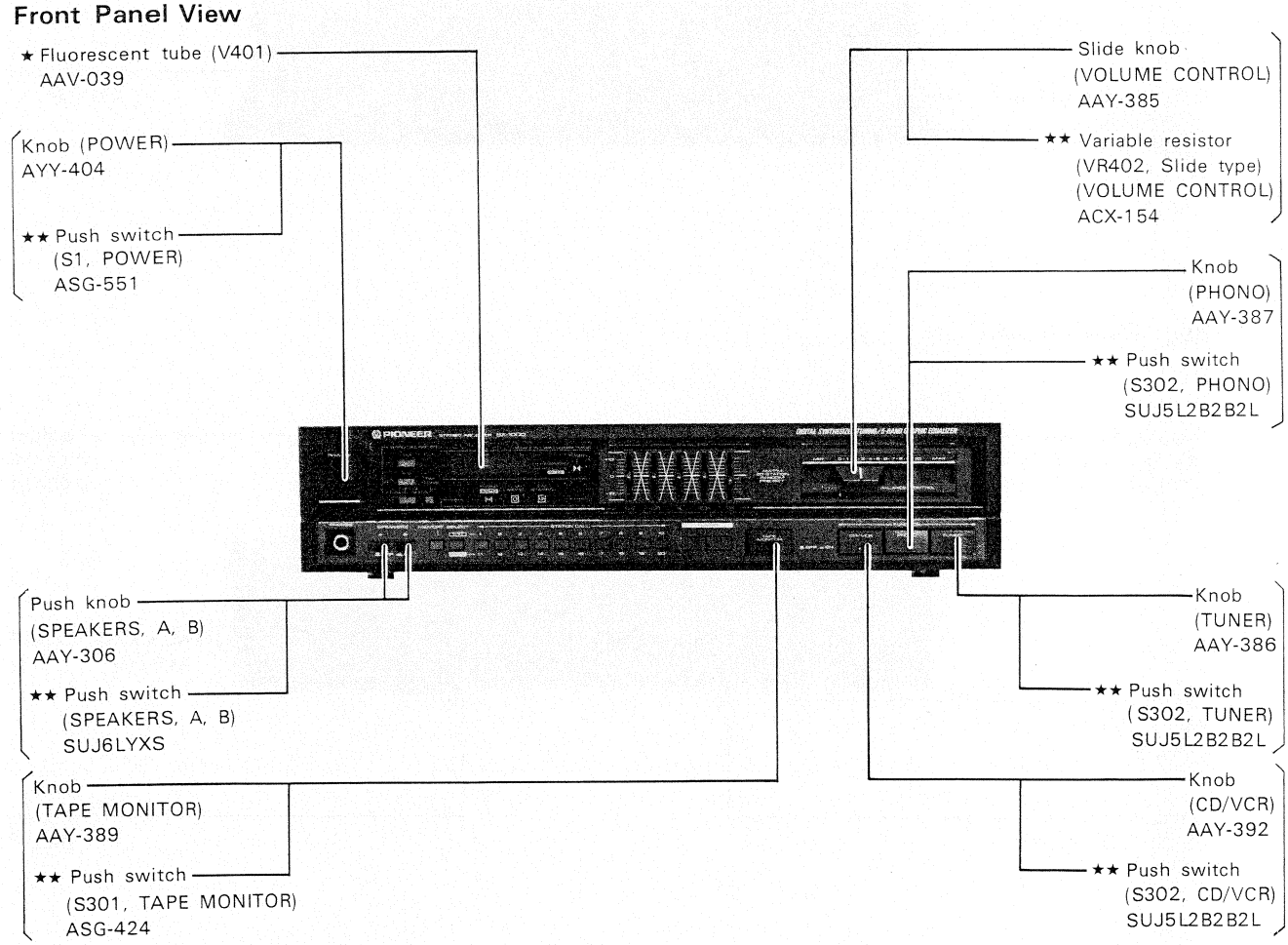
[CD/VCR]
Press when listening to a stereo component connected to the CD/VCR jacks.
[PHONO]
Press when playing records on a turntable connected to the PHONO jacks.
[TUNER]
Press when listening to radio broadcast.

4. PARTS LOCATION

NOTES:

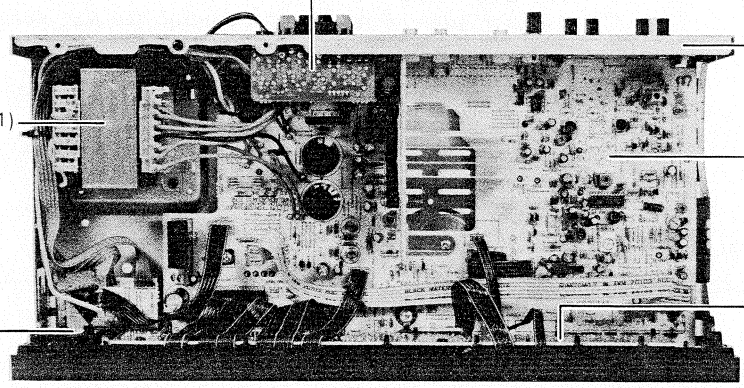
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Front Panel View

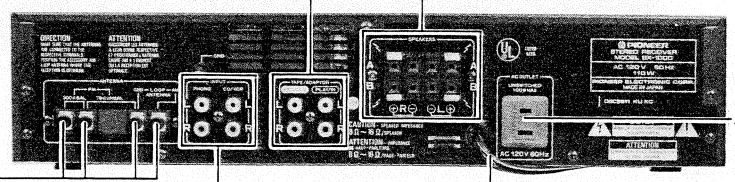


Note: The parts described above the drawn out lines show those which are attached to the front side of the front panel. The parts described below show those attached to the rear side of the front panel.

Top View with Bonnet Case Removed



Rear Panel View



5. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	56 × 10¹	561	RD¼PS 5 6 1 J
47kΩ	47 × 10³	473	RD¼PS 4 7 3 J
0.5Ω	0R5		RN2H 0 R 5 K
1Ω	010		RS1P 0 1 0 K

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562 × 10¹	5621	RN¼SR 5 6 2 1 F

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Complex assembly	GWM-497
	Control assembly	GWY-383
	HEAD PHONE assembly	Non supply
	SP TERMINAL assembly	Non supply

OTHERS

Mark		Symbol & Description	Part No.
⚠		C901 Capacitor (0.01/125V)	ACG-001
⚠	★	T901 Power transformer (AC 120V)	ATS-286
⚠		AC socket (AC OUTLET)	AKP-507
⚠	★★	S1 Push switch (POWER)	ASG-551
⚠	★★	FU601 Fuse (1.6A)	AEK-121
		FM antenna	ADH-005
		Loop antenna assembly	ATB-102
⚠		Power cord	ADG-088

Complex Assembly (GWM-497)

SEMICONDUCTORS

Mark		Symbol & Description	Part No.
	★★	IC101 AM/FM IC	LA1265S
	★★	IC301 OP-AMP IC	NJM4558DXC
	★★	IC701 U-COM IC	PD2017
⚠	★★	IC501 AUDIO-IC	STK4141-2S
	★★	IC201 FM MAX IC	TA7343AP
	★★	IC702 PLL IC	TC9172P
	★★	IC601 REGURATOR IC	μPC78M12H
	★★	Q704, Q706—Q708	DTA124ES (RN2203)
	★★	Q709, Q714	DTA143ES (RN2201)
	★★	Q701, Q705, Q710, Q713	DTC124ES (RN1203)
	★★	Q603	2SC1845
	★★	Q201—Q203, Q601, Q602, Q703, Q711, Q712, Q715, Q716	2SC2458 (2SC2603)
	★★	Q3, Q4	2SC2668
	★★	Q2	2SC2786
	★★	Q5 N-FET	2SK161 (2SK168)
	★★	Q1 MOS-FET	2SK241
⚠	★	D603	RBV402
	★	D609, D612	RD12EB (HZ12EB)
	★	D608	RD20EB (HZ20EB)
	★	D604, D607	RD5.6EB (HZ5.6EB)
	★	D1, D2	ITT301
	★	D101, D102	SVC321C2/D2
	★	D103, D104, D605, D606, D610, D611, D702—D709	1SS131
⚠	★	D601, D602, D201, D202	11E2 (S5566)

SWITCHES AND RELAY

Mark		Symbol & Description	Part No.
	★★	S301 Push switch (TAPE MONITOR)	ASG-424
	★★	S701—S712 Tact switch (STATION CALL 1-10 11-20, UP, DOWN)	ASG-712
	★★	S302 Push switch (CD/VCR, PHONO, TUNER)	SUJ5L2B2B2L
	★	RY501 Relay	ASR-111

COILS, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	T101 AM ANT transformer	ATB-099
	L101 AM OSC coil	ATB-114
	T1 FM RF transformer	ATC-194
	L2 FM OSC coil	ATC-269
	T2 FM coupling transformer	ATE-063
	L102 FM Detection coil	ATE-079
	F2 FM Ceramic filter	ATF-126
	F1 FM Band pass filter	ATF-155
	F101 AM Ceramic filter	ATF-208
	L103 Inductor	ATH-108
	L501, L502 Choke coil	ATH-133
	L1 Inductor	LAU2R2M

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C611 Ceramic capacitor	ACG-502
	C606, C607 Electrolytic	ACH-249
	C715	ACH-902
	TC101, TC106 Ceramic trimmer	ACM-026
	C102	CCCCH150J50
	C703, C704	CCCCH330J50
	C16	CCCSL010C50
	C505, C506	CCCSL101J50
	C17	CCCSL150J50
	C112, C303, C304	CCCSL221J50
	C1	CCDCH040C50
	C13	CCDCH080D50
	C11	CCDCH150J50
	C12	CCDCH330J50
	C3	CCDRH180J50
	C5	CCDSL020C50
	C7	CCDSL101J50
	C14	CCDTH150J50
	C201, C501, C502	CEANP010M50
	C114, C204, C207, C210—C212, C705	CEAS010M50
	C708	CEAS1R5M50
	C511, C512, C609, C612	CEAS100M50
	C10, C202, C604	CEAS101M16
	C507, C508	CEAS101M25
	C513	CEAS101M50
	C605	CEAS2R2M100
	C118, C301, C302, C313, C314, C317, C318	CEAS2R2M50
	C206	CEAS221M16
	C701	CEAS222M6
	C120, C203, C711	CEAS3R3M50
	C111, C123, C710	CEAS330M16
	C121	CEAS4R7M50
	C119, C305, C306, C610, C706	CEAS470M10
	C601, C602	CEAS470M25
	C509, C510	CEAS470M50
	C608	CEAS471M35
	C603	CEAS471M6
	C117, C702, C707	CKCYB102K50
	C503, C504	CKCYB122K50
	C107, C113, C115, C125, C213, C307, C308, C709, C712, C714	CKCYF103Z50
	C104, C105, C116, C124	CKCYF223Z50
	C122	CKCYF473Z50
	C315, C316	CKDYB391K50
	C2, C4, C8, C9, C15, C18	CKDYF103Z50
	C108, C109	CKDYF223Z50
	C110	CKDYF473Z50
	C208, C209	CQMA183K50
	C309, C310	CQMA242J50
	C514, C515	CQMA473K50
	C311, C312	CQMA822J50
	C205	CQSA102J50
	C103	CQSA431J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R611 Carbon composition	ACN-209
⚠	R509—R512, R507, R508	RD1/2PMF□□□J
⚠	R515—R519, R522	RD1/4PMF□□□J
	R7	RD1/4PM151J
⚠	R603	RS1PMF181J
⚠	R608	RS1PMF561J
⚠	R601	RS1PMF821J
⚠	R602	RS2LMF821J
★	VR101 Semi-fixed	VRTB6VS473
★	VR201 Semi-fixed	VRTB6VS472
	Other resistor	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	4P ANT terminal (FM, LOOP ANT)	AKA-017
	Terminal (PHONO, CD/VCR1)	AKB-115
★	X701 Crystal resonator	ASS-025
	Rivet	AEP-230

Control Assembly (GWY-383)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401, IC402 AUDIO IC	BA3812L
★★	IC403 OP-AMP IC	M5218PF
★	D402 LED assembly	AEL-460
★	D406, D408 LED assembly	AEL-461
★	D403 LED assembly	AEL-463
★	D407	1SS131
★	D401	11E2

SWITCHES

Mark	Symbol & Description	Part No.
★★	S401—S406 Tact switch (FM MONO, FM, AM, AUTO/MANUAL, MEMORY, SELECT)	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C431, C432	CEASR68M50
	C405, C406	CEAS101M10
	C409—C412	CEJA4R7M35
	C427, C428	CEJAR22M50
	C401, C402, C433, C434	CEJA4R7M35
	C403, C404	CEAS470M25
	C415, C416	CKCYB122K50
	C407, C408	CKCYB331K50
	C413, C414	CKCYB391K50
	C435, C436	CKCYF103Z50
	C425, C426	CQMA123K50
	C421, C422	CQMA223K50
	C417, C418	CQMA392K50
	C429, C430	CQMA393K50
	C423, C424	CQMA682K50
	C419, C420	CQMA683K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR403—VR407 Variable resistor (Slide type, 30K) (GRAPHIC EQUALIZER)	ACX-152
★	VR401 Variable resistor (Slide type, 250K) (BALANCE CONTROL)	ACX-153
★	VR402 Variable resistor (Slide type, 100K) (VOLUME CONTROL)	ACX-154
	R419	RD1/2PM561J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V401 Fluorescent tube	AAV-039

HEADPHONE Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Push switch (SPEAKERS A, B)	SUJ6LYXS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R901, R902	RS1PMF331J

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

SP TERMINAL Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (8P, SPEAKERS)	AKE-111

6. EXPLODED VIEW

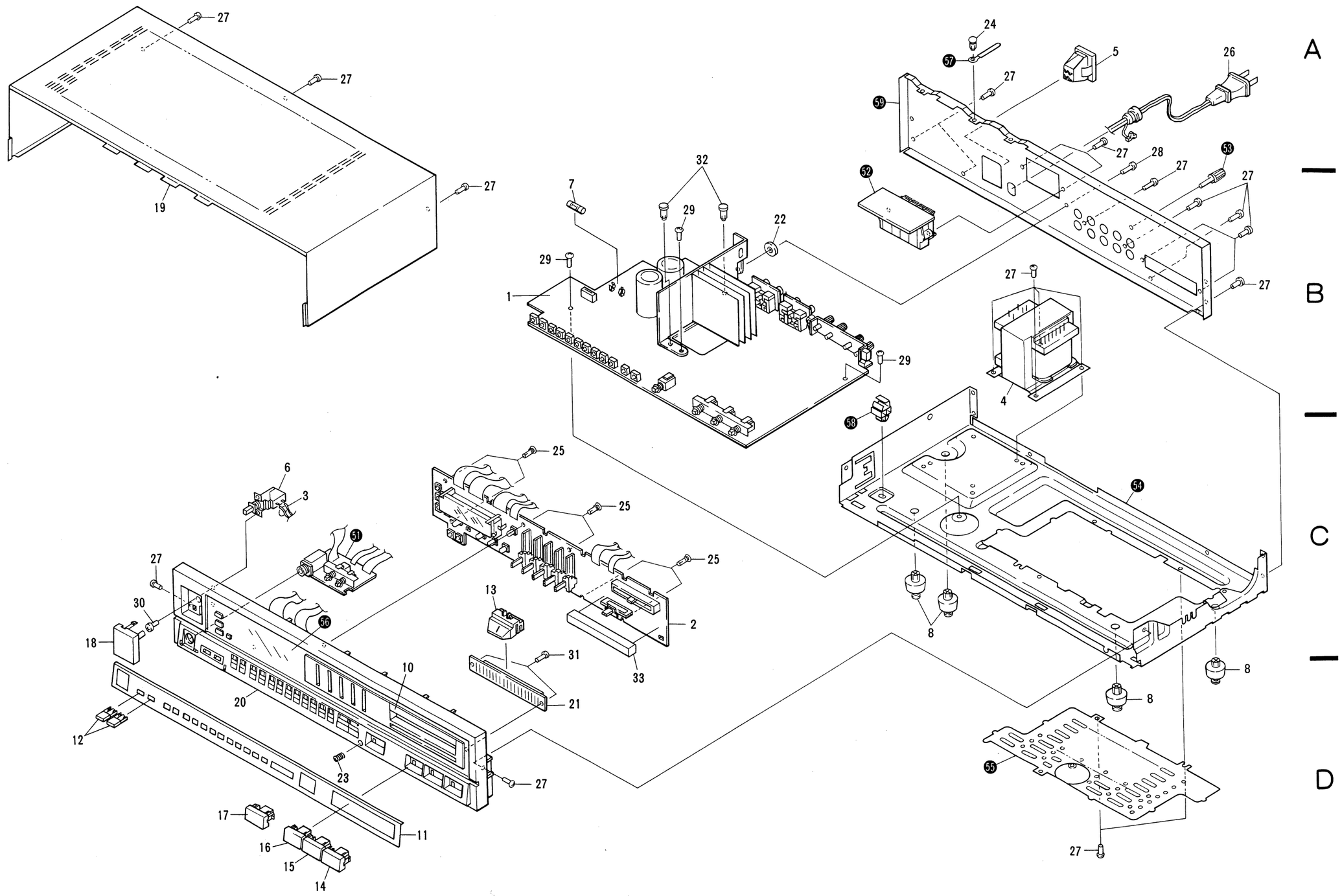
NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List

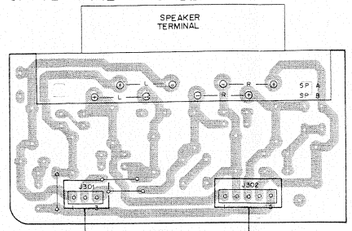
Mark	No.	Part No.	Description
	1	GWM-497	Complex assembly
	2	GWY-383	Control assembly
⚠	3	ACG-001	C901 Capacitor (0.01/125V)
⚠ ★	4	ATS-286	T901 Power transformer (AC120V)
⚠	5	AKP-507	AC Socket (AC OUTLET)
⚠ ★★	6	ASG-551	S1 Push switch (POWER)
⚠ ★★	7	AEK-121	FU601 Fuse (1.6A)
	8	AEC-784	Leg assembly
	9		.....
	10	AAH-123	Volume panel
	11	AAH-126	Aluminum sash
	12	AAY-306	Push knob A (SPEAKERS A, B)
	13	AAY-385	Slide knob (VOLUME CONTROL)
	14	AAY-386	Function knob (TUNER)
	15	AAY-387	Function knob (PHONO)
	16	AAY-392	Function knob (CD/VCR)
	17	AAY-389	Function knob (TAPE MONITOR)
	18	AAY-404	Knob (POWER)
	19	ANE-623	Bonnet case
	20	ANY-190	Front panel
	21	ANZ-323	Blinder
	22	ABE-061	Washer
	23	ABH1003	Coil spring
	24	AEC-471	Nylon rivet
	25	AEC-558	Nylon rivet
⚠	26	ADG-088	Power cord
	27	BBZ30P080FZK	Screw
	28	PBZ25P100FMC	Screw
	29	VBT30P100FZK	Screw
	30	VMZ30P060FMC	Screw
	31	VPZ23P060FMC	Screw
	32	AEP-230	Nylon rivet
	33	AEB1005	Cushion
	51		HEAD PHONE assembly
	52		SP TERMINAL assembly
	53		Terminal (GND)
	54		Chassis
	55		Bottom plate
	56		Sheet panel
	57		Binder
	58		P.C. board holder
	59		Rear panel

		Description
	1	Knob (POWER)
	2	Bonnet case
	3	Front panel
	4	Blinder
	5	Washer
	6	
	7	Coil spring
	8	Nylon rivet
	10	Nylon rivet
	11	Power cord
	12	Screw
	13	
	14	Screw
	15	Screw
C	16	Screw
	17	Screw
	18	Nylon rivet
	19	
	20	Cushion
	21	
	22	
	23	HEAD PHONE assembly
	24	SP TERMINAL assembly
	25	Terminal (GND)
	26	Chassis
	27	Bottom plate
	28	
	29	
	30	Sheet panel
	31	Binder
	32	P.C. board holder
	33	Rear panel
	51	
	52	
	53	
	54	
	55	
	56	
	57	
	58	
	59	

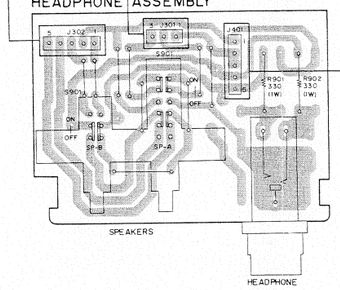


7. P.C.BOARDS CONNECTION DIAGRAM

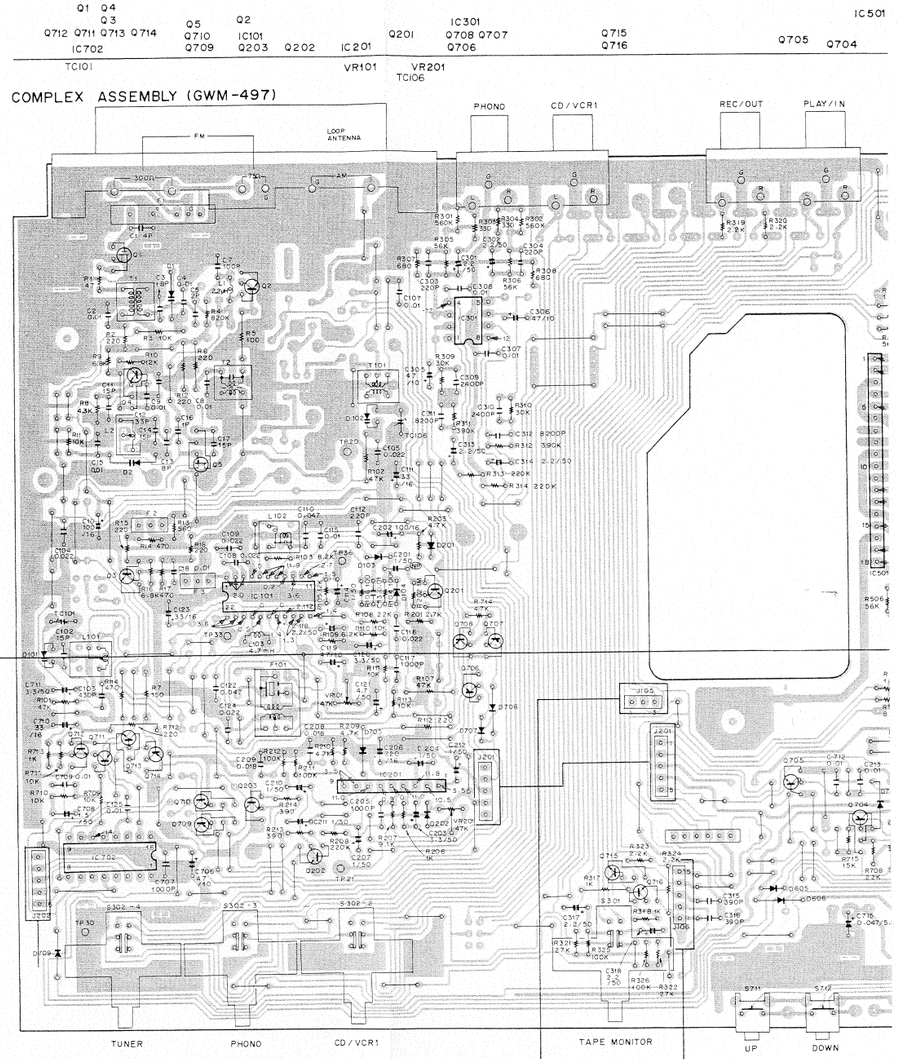
SP TERMINAL ASSEMBLY



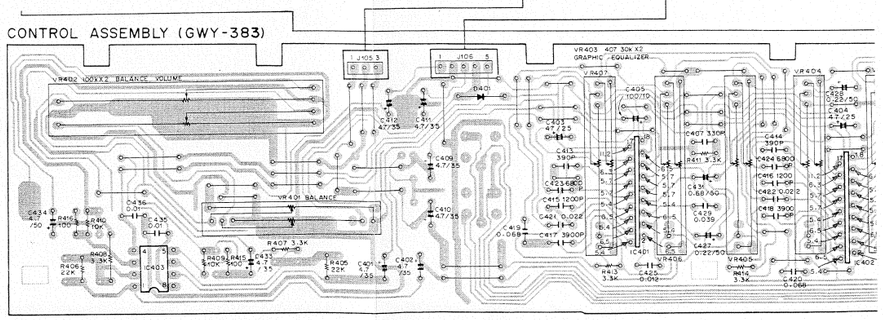
HEADPHONE ASSEMBLY



COMPLEX ASSEMBLY (GWM-497)

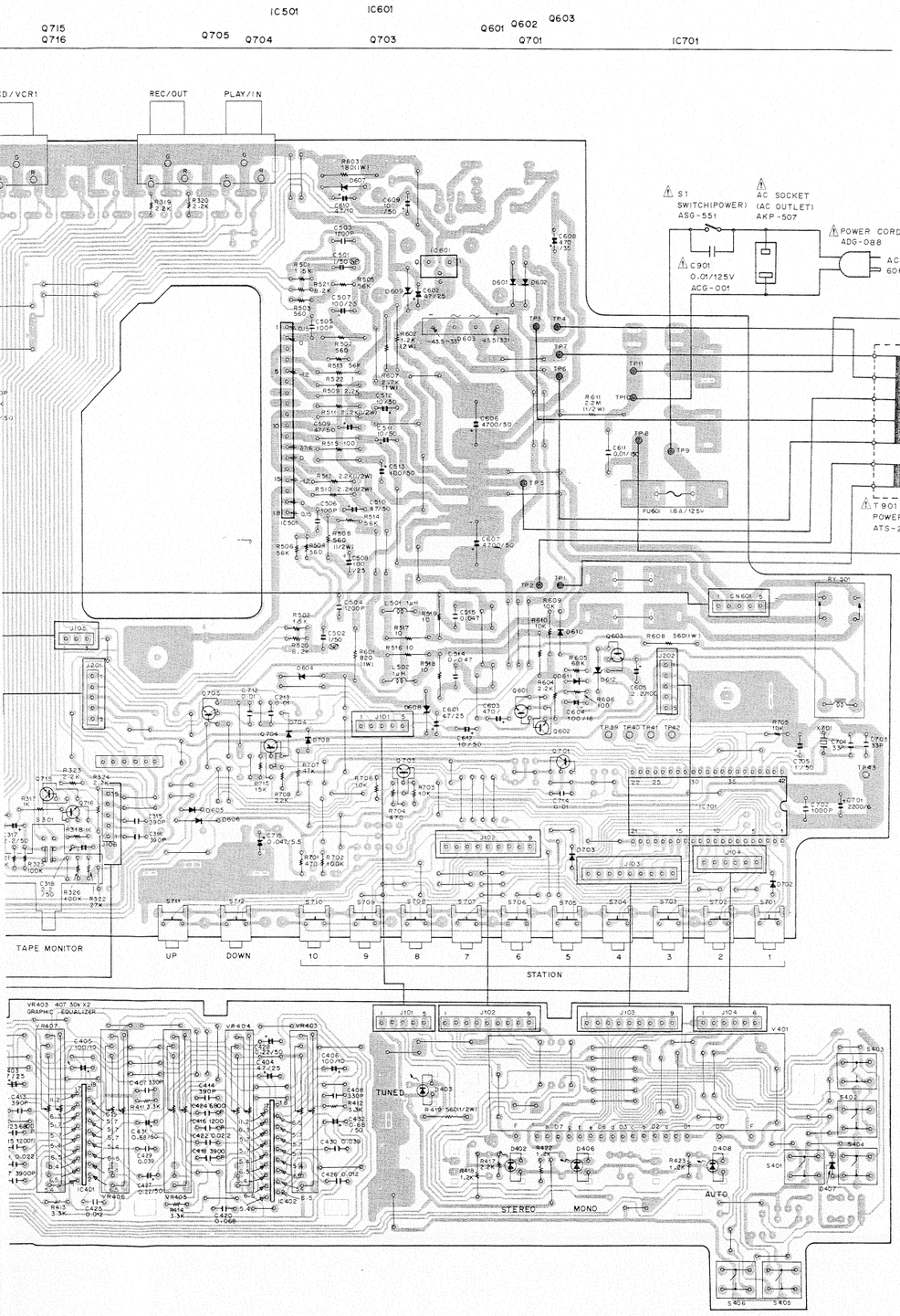


CONTROL ASSEMBLY (GWY-383)



Q401, Q704, Q706 - Q709, Q714

Q402, Q701, Q702, Q705, Q710, Q713

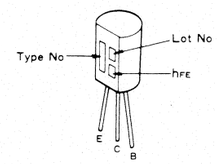


IC702	: TC9172P
IC101	: LA1265S
IC201	: TA7343AP
IC301	: NJM4558DXC
IC501	: STK4141-2S
IC601	: μPC78M12H
IC701	: PD2017
Q1	: 2SK241
Q2	: 2SC2786
Q3, Q4	: 2SC2668
Q5	: 2SK161(2SK168)
Q201-Q203, Q601, Q602, Q703, Q711, Q712, Q715, Q716	: 2SC2458 (2SC2603)
Q603	: 2SC1845
Q701, Q705, Q710, Q713,	: DTC124ES (RN1203)
Q702	: DTC143(RN1201)
Q704, Q706, Q707, Q708, Q709, Q714,	: DTA124ES (RN2203)
	: DTA143ES(RN2201)
D1, D2	: ITT310
D101, D102	: SVC321C2/D2
D103, D104, D605, D606, D610, D611, D702, D703 - D709	: ISS131
D201, D202, D601, D602	: IIE2(S5566)
D603	: RBV402
D604, D607	: RD5.6EB(HZ5.6EB)
D608	: RD20EB(HZ20EB)
D609, D612	: RD12EB(HZ12EB)

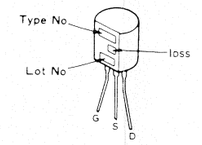
IC401, IC402	: BA3812L
IC403	: M5218PF
D401	: IIE2(S5566)
D407	: ISS131
D402	: AEL-460
D403	: AEL-463
D404, D406	: AEL-461

External Appearance of Transistors and ICs

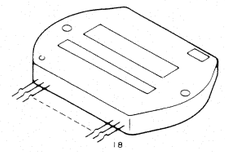
2SC1845



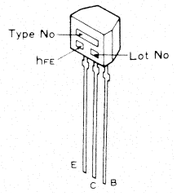
2SK168



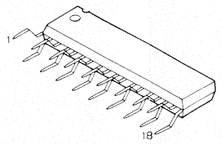
STK4141-2S



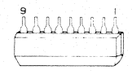
2SC2458



BA3812L

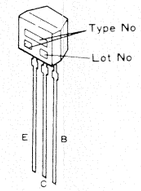


TA7343AP

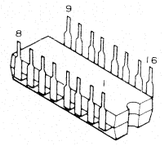


2SC2603

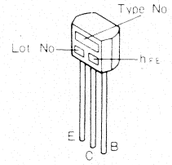
DTA124ES
DTA143ES
DTC124ES



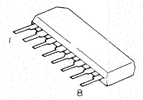
TC9172P



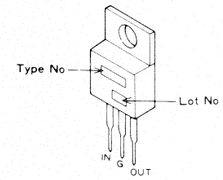
2SC2668



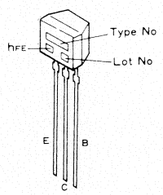
LA1265



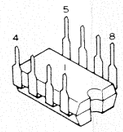
μPC78M12H



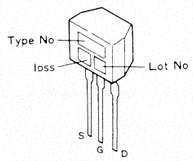
2SC2786



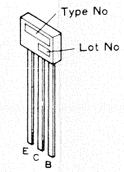
M5218PF
NJM4558DXC



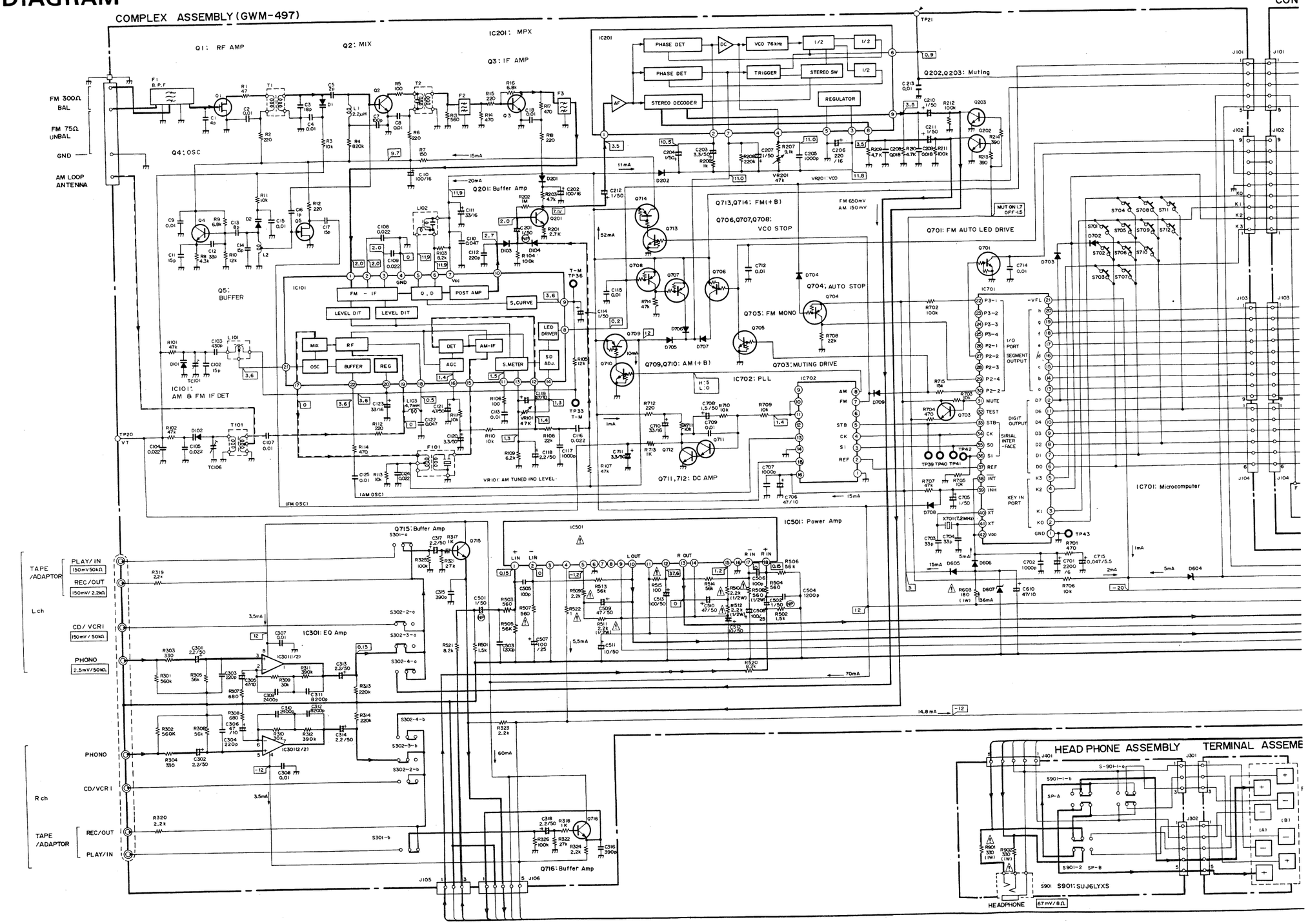
2SK161
2SK241

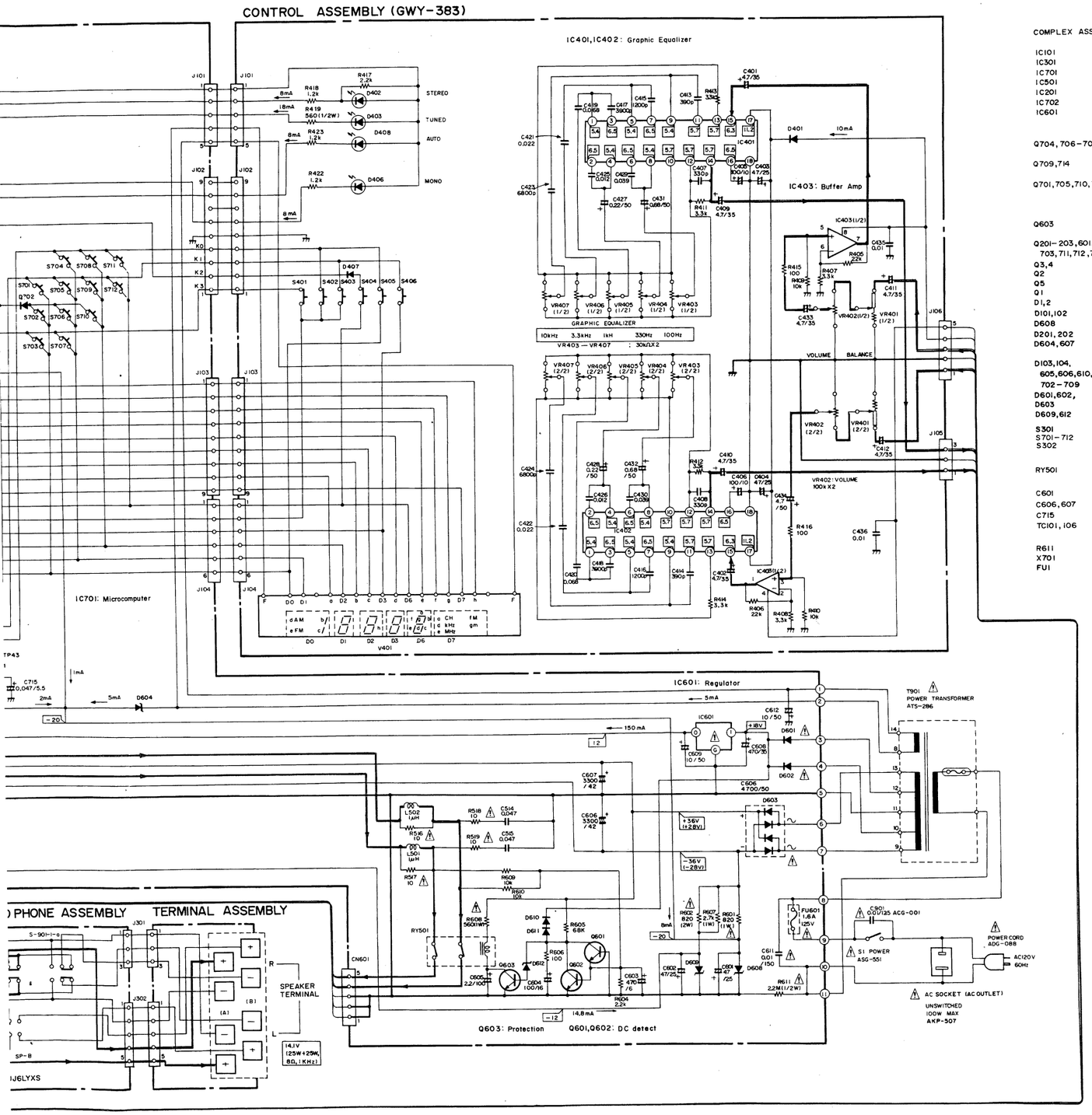


RN1203
RN2201
RN2203



8. SCHEMATIC DIAGRAM





COMPLEX ASSEMBLY	
IC101	LA1265S
IC301	NJM45558DXC
IC701	PD2017
IC501	STK4171-2S
IC201	TA7343AP
IC702	TC9172P
IC601	μPC78M12H
Q704,706-708	DTA124ES (RN2203)
Q709,714	DTA143ES (RN2201)
Q701,705,710,713	DTC124ES (RN1203)
Q603	2SC1845
Q201-203,601,602, 703,711,712,715,716	2SC2458 (2SC2603)
Q3,4	2SC2668
Q2	2SC2786
Q5	2SK161(2SK168)
Q1	2SK241
D1,2	1T T301
D101,102	SVC321C2/D2
D608	RD20EB(HZ20EB)
D201,202	1IE2(S5566)
D604,607	RD5.6EB (HZ5.6EB)
D103,104, 605,606,610,611, 702-709	1SS131
D601,602,	1IE2(S5566)
D603	RBV402
D609,612	RD12EB(HZ12EB)
S301	ASG-424
S701-712	ASG-712
S302	SUJ5L2B2B2B2L
RY501	ASR-111
C601	ACG-502
C606,607	ACH-252
C715	ACH-902
TC101,106	ACM-026
R611	ACN-209
X701	ASS-025
FU1	AEK-123

CONTROL ASSEMBLY	
IC401,402	BA3812L
IC403	M5218PF
D402	AEL-460
D406,408	AEL-461
D403	AEL-463
D407	1SS131
D401	1IE2(S5566)
VR403-407	ACX-152
VR401	ACX-153
VR402	ACX-154
S401-406	ASG-711
V401	AAV-039

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   [V]: Signal voltage at 25W + 25 W, 8Ω output (1 kHz)
   ( ): DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA: DC current at no input signal
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ✕ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

THE UNDERLINED INDICATES THE SWITCH POSITION

S1	POWER ON-OFF	S701	STATION1
S301	TAPE MONITER	S702	STATION2
S302-1	AUX / VCR2	S703	STATION3
S302-2	CD / VCR1	S704	STATION4
S302-3	PHONO	S705	STATION5
S302-4	TUNER	S706	STATION6
S401	AUTO/MONO	S707	STATION7
S402	FM	S708	STATION8
S403	AM	S709	STATION9
S404	AUTO/MANUAL	S710	STATION10
S405	MEMORY	S711	UP
S406	SELECT	S712	DOWN

S901: SPEAKERS
S901-a SP-A ON-OFF
S901-b SP-B ON-OFF

9. ADJUSTMENTS

FM TUNER SECTION

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the SX-1000(BK) to the FM band.

(*1) Tune the FM SG to the SX-1000(BK)

(*2) Connect the FM multiplex stereo signal generator to the FM SG external modulator terminal. Set the modulation to Main 1 kHz/L+R/±68.25 kHz deviation, Pilot 19 kHz/±6.75 kHz deviation.

Step	FM SG (1kHz, ±75kHz deviation)		SX-1000(BK) Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	98.0MHz	30 to 40dB	98.0MHz	T1, T2	Adjustment until DC voltage between IC101 (13) pin and ground is maximum.
2	98.0MHz	60dB	98.0MHz	L102	Adjust DC voltage between terminal TP(T-M) and TP(T-M) to 0±50mV.
3	98.0MHz(*1)	60dB	98.0MHz	VR201	Adjust signal between terminal TP(no.21) (VCO) and ground to 38kHz (within ±500Hz).
	not modulation				

Note: Adjust the VCO by inserting a resistance of 4.7 kΩ between TP21 (VCO) and GND. (VCO will not appear at the TP pin if a resistance of 4.7 kΩ is not inserted.)

AM TUNER SECTION
MW Tuner Section

- Connect the furnished AM loop antenna between terminals AM ANTENNA and GND.
- Connect the AM signal generator (AM SG) to the AM ANTENNA terminal through a 10 kΩ resistor.
- Set the SX-1000(BK) to the AM (MW) band.

(*3) There are 2 kinds of models in the SX-1000[BK] system. The one is the channel step frequency of 10 kHz and the other is 9 kHz. Accordingly, in case of model 10 kHz step, the adjustment should be performed by using the frequency of Item "10 kHz step" and in case of model 9 kHz step, the adjustment should be performed by using the frequency of Item "9 kHz step".

(*4) Tune the AM SG to the SX-1000(BK).

Step	AM SG (400Hz, 30% modulation)			SX-1000(BK) Frequency display (*3)		Adjustment point	Adjustment procedure
	Frequency (*3)		Level				
	10kHz step	9kHz step		10kHz step	9kHz step		
1	No signal			530kHz	531kHz	L101	$1.2V^{-0.2}_{+0.3}$V DC between terminal TP(no.20) (VT) and ground.
2	No signal			1600kHz	1602kHz	TC101	10±0.5V DC between terminal TP(no.20) (VT) and ground.
3	Repeat steps 1 and 2 until both specifications are correct.						
4	600kHz(*4)	603kHz(*4)	76dB	600kHz	603kHz	T101	Adjust until DC voltage between IC101 (13) pin (AMS) and ground is maximum.
5	1400kHz(*4)	1395kHz(*4)	76dB	1400kHz	1395kHz	TC106	
6	Repeat steps 4 and 5 until maximum sensitivity is attained						
7	1000kHz	999kHz	76dB	1000kHz	999kHz	VR101	Adjust a VR101 to light up a tuning indicator.

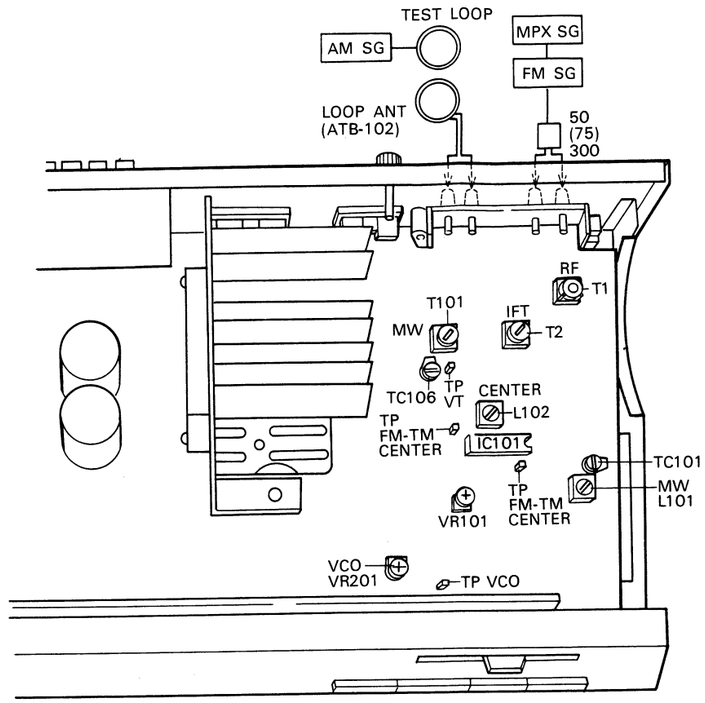
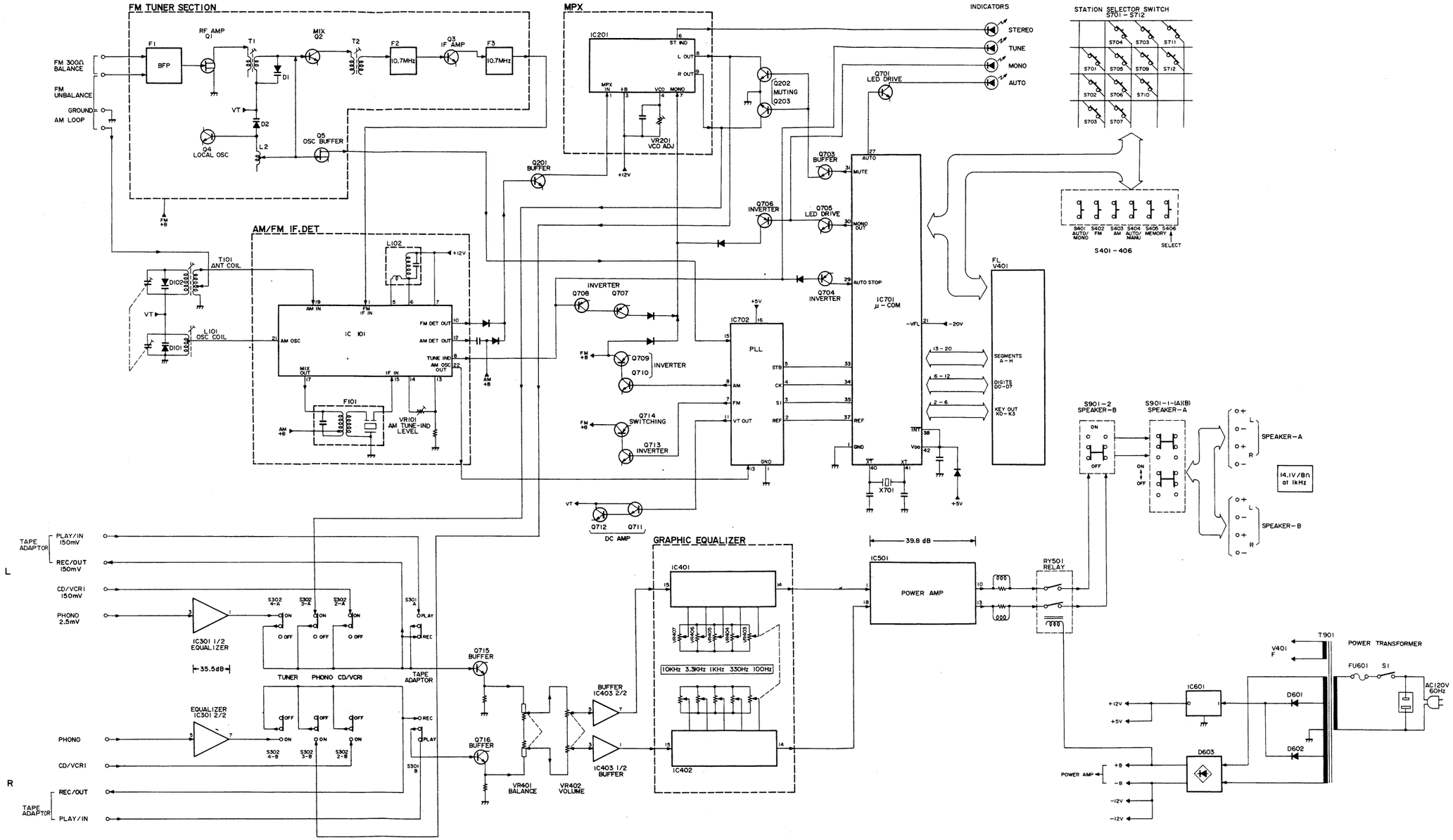


Fig. 9-1 Adjustment point

10. BLOCK DIAGRAM



11. CIRCUIT DESCRIPTIONS

11.1 CIRCUIT DESCRIPTIONS

■ Block diagram

The block diagram is as shown on pages 23 and 24.

■ Phono eqaulizer section

In the phono equalizer section, the low noise operational amplifier 4558DXC is used and the RIAA equalization is performed.
It uses one dual OP AMP, NJM 4558DXC for Rch and Lch. It can obtain the RIAA characteristics by inserting the RIAA elements, R309, R311, C309 and C311 into the NF side.

■ Tuner section

The tuner section is of the synthesizer system which enables to preset at random 20 FM/AM stations.
The circuit is structured by the front end which is comprised of a duplex connection equivalent variable capacitor and a band-pass filter, and an IC (FM/AM IC LA1265S) which integrates the FM IF amplifier and detector, and AM oscillator, mixer, IF amplifier and detector into one chip. The FM MPX demodulation is carried out by the TA7343AP.
Switching of the AM and FM within the IC can be carried out by whether the AM+B is added or not.
Since the FM OUT (pin 10) and AM OUT (pin 16) are separated respectively, connection to the MPX section can be made by the diode switch of D103 and D104 after being compensated by the AM frequency characteristics.

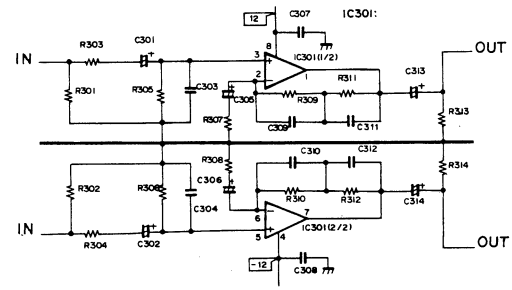


Fig. 11-1 PHONO Equalizer circuit

■ MPX demodulation

The MPX demodulated output can be obtained from pin 8 (Lch) and pin 9 (Rch).
Monitoring of the 38 kHz signal can be carried out by connecting a resistance of approximately 4.7 kΩ to pin 6 of TA7343AP against GND. This output of pin 6 can be used for a monitor pin when adjusting the VCO.

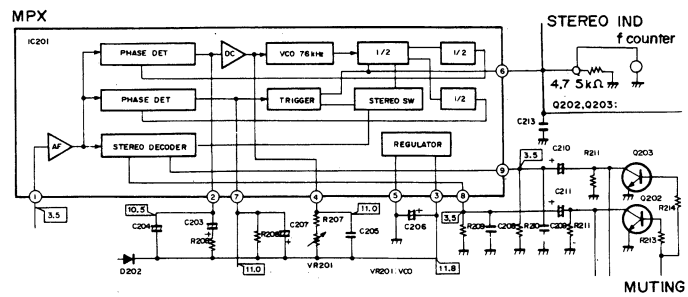


Fig. 11-3 MPX demodulation circuit

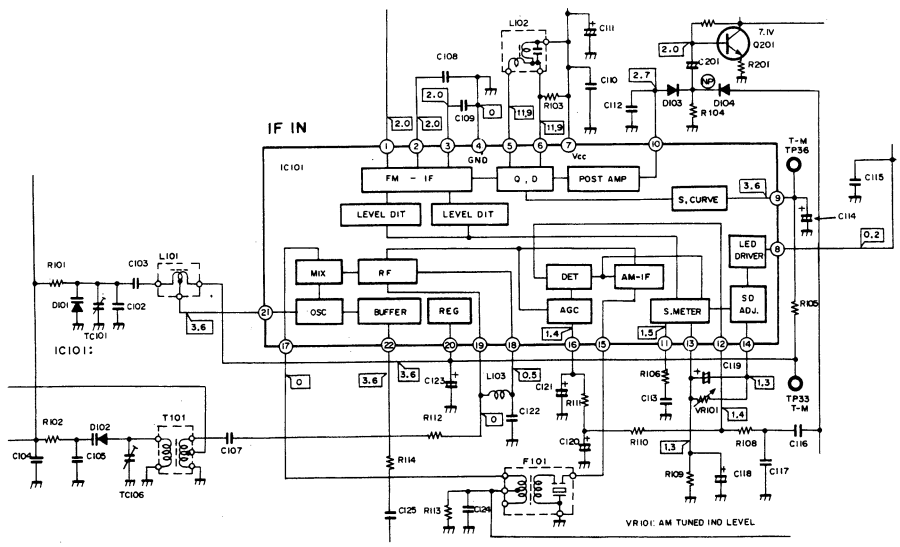


Fig. 11-2 TUNER circuit

■ 5-band graphic equalizer section

The circuit is structured by 2 graphic EQ dedicated IC BA3812L (each for L and R) and 5 sliding volumes. It enables to control the individual frequencies with ±8 dB.
The circuit is comprised of a graphic EQ dedicated IC BA3812L, sliding volumes and an externally attached element.
The BA3812L is comprised of the semiconductor inductor equivalent to 5 elements and an OP AMP for adding use.
The center frequency of the graphic EQ is determined by setting the center value and resonance frequency of the semiconductor inductor by the externally attached capacitors (ex. C417 and C419). In this model, they are set at 100 Hz, 330 Hz, 1 kHz, 3.3 kHz and 10 kHz.

■ Power amplifier section

In the power amplifier section, 2-circuit 1 package hybrid IC STK-4141IIS is used and an 8Ω corresponding convection heat radiator is employed. The output of 25W+25W is obtained.

■ Control section

The control section of this model is mainly used for controlling the tuner section. The custom microcomputer PD2017 manufactured by Pioneer Co., Ltd. is used as the control IC.
Its major functions are PLL controlling, lighting of the FL dynamic, switching of FM and AM, station memory, etc.

■ Others

1 Since the super capacitor (47000 μF) is used as the memory back up of the station, the memory is not cancelled for several weeks*note after the power supply is turned off.
However, in the event the memory has been cancelled due to the power supply being off for a long duration of time, perform the renewal of the memory again. [*Note: for approximately over a month]

2 The location of the antenna of this model can be set freely since a large loop antenna is used for AM receiving.

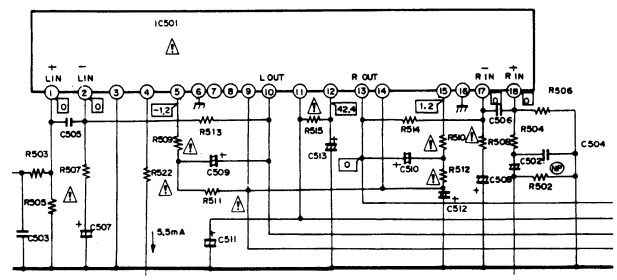


Fig. 11-5 Power AMP circuit

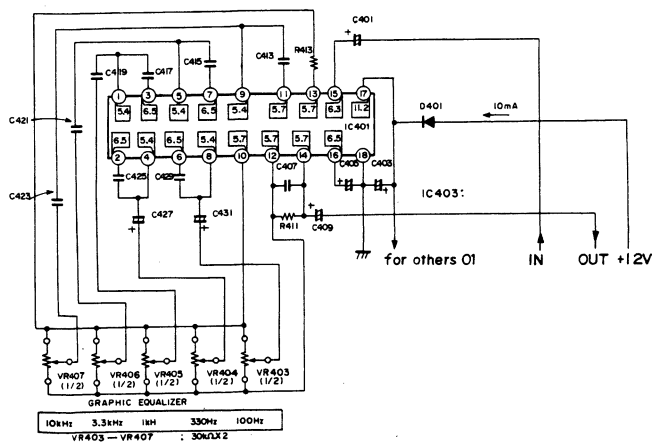


Fig. 11-4 5-band graphic equalizer circuit

11.2 IC data

■ TA7343AP

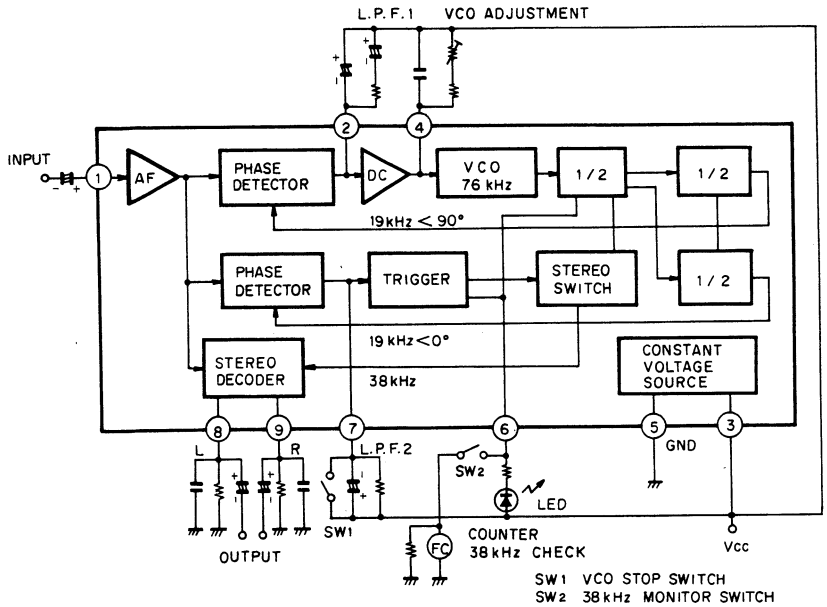


Fig. 11-7 Block diagram of TA7343AP

■ LA1265S

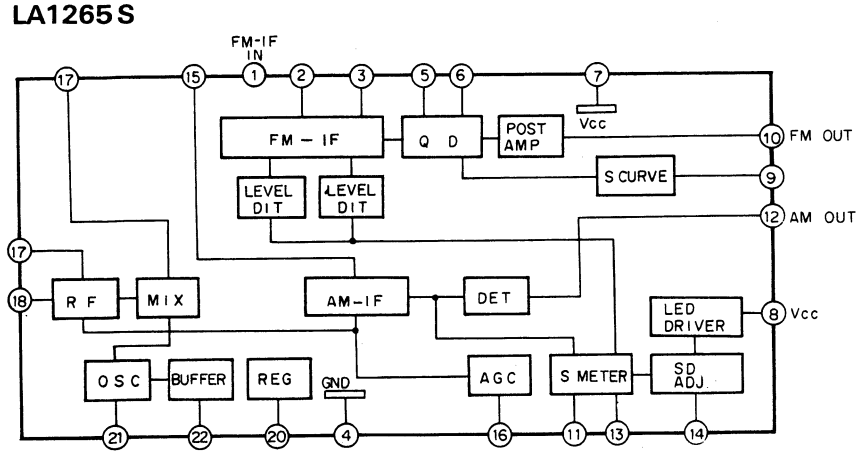


Fig. 11-8 Block diagram of LA1265S

■ STK4141IIS

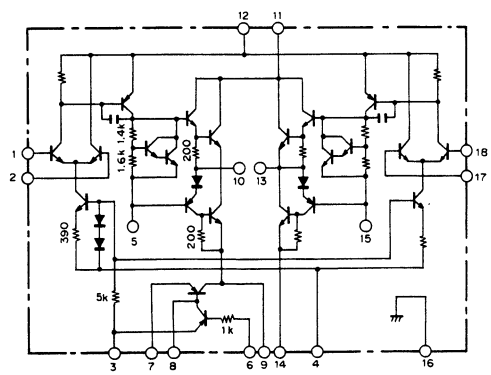


Fig. 11-10 Block diagram of STK4141IIS

■ PD2017

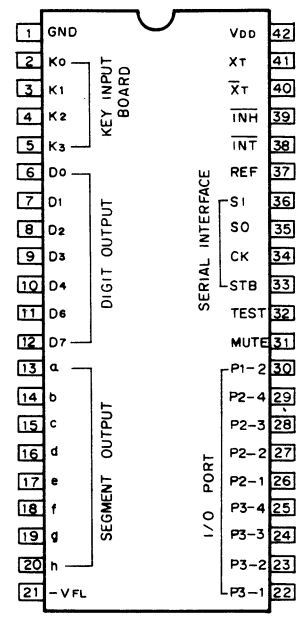


Fig. 11-9 Pin alignment of PD2017

12. PACKING

Parts List

Mark	No.	Part No.	Description
	1	ADH-005	FM Antenna
	2	ARB-720	Operating instruction (English)
	3	ATB-102	Loop antenna assembly
	4	AHA-394	Side pad
	5	AHE-691	Packing case